

What is claimed is:

1. A laser apparatus comprising:

a semiconductor laser element which emits first laser light having a first wavelength;

5 a surface-emitting semiconductor element which is excited with said first laser light, emits second laser light having a second wavelength which is longer than said first wavelength, and has an active layer and a first mirror arranged on one side of said active layer;

10 a second mirror which is arranged outside said surface-emitting semiconductor element so that said first and second mirrors form a resonator in which said second laser light resonates; and

15 a modulation unit which modulates said surface-emitting semiconductor element.

20 2. A laser apparatus according to claim 1, wherein said surface-emitting semiconductor element has a pn junction, and said modulation unit modulates the surface-emitting semiconductor element by varying a voltage applied to the pn junction.

25 3. A laser apparatus according to claim 1, wherein said surface-emitting semiconductor element has a Schottky junction, and said modulation unit modulates the surface-emitting semiconductor element by varying a voltage applied to the Schottky junction.

4. A laser apparatus according to claim 1, wherein said

surface-emitting semiconductor element comprises a structure for controlling a spatial mode of said second laser light.

5. A laser apparatus according to claim 4, wherein said structure is realized by a pinhole spatial filter being  
5 arranged at a light-exit end surface of said surface-emitting semiconductor element, having a pinhole, and allowing passage of said second laser light emitted by the surface-emitting semiconductor element, through only the pinhole.

6. A laser apparatus according to claim 4, wherein said  
10 first mirror has a limited area, is arranged in parallel with a light-exit end surface of said surface-emitting semiconductor element, and realizes said structure.

7. A laser apparatus according to claim 4, wherein said  
15 active layer is formed in only a limited area in a plane parallel to a light-exit end surface of said surface-emitting semiconductor element, and realizes said structure.

8. A laser apparatus according to claim 4, wherein said  
20 structure has a size which is 0.1 to 10 times as large as a diameter to which said second laser light spreads at a position of the structure for controlling the spatial mode of the second laser light.